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HEAT SHOCK PROTEIN 90 EXPRESSION AND ITS CLINICAL RELEVANCE IN SYSTEMIC LUPUS ERYTHEMATOSIS

Thesis

Submitted for Partial Fulfillment of M.D Degree in
Clinical and Chemical Pathology

By

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"قالوا سبحانك لا علم لنا إلا ما

علمتنا إنك أنت العليم الحكيم"

صدق الله العظيم

سورة البقرة

آية ٣٢

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Abstract

The heat shock proteins (HSPs) are a group of constitutive proteins with important physiological functions, whose synthesis is enhanced by elevated temperature and other stressful conditions. Heat shock proteins act as immunological target structure either by themselves because of an unusual expression pattern, or they are carrier proteins for immunogenic peptides.

Systemic lupus erythematosus (SLE) is characterized by immunological dysfunction affecting skin, lung, heart and muscles.

The aim of this study was to assess the state of heat shock protein 90 (HSP90) expression in SLE and to clarify the relation between HSP90 expression and disease process and activity. This study was performed on 34 SLE patients and 13 control subjects of matching age and sex. HSP90 expression in peripheral blood mononuclear cells (PBMC) was detected using Western blotting technique.

HSP90 was detectable in 29.4% (out of 34) of SLE patients and in none of the control group. The protein expression was significantly associated with some parameters of disease activity. Evidences suggest that HSP90 may play a potential role in etiopathogenesis of the disease.

Further studies on a larger scale may clarify the exact role of HSP90 in SLE which may be of help in management of the disease.

LIST OF ABBREVIATIONS

ANA	: Antinuclear antibodies.
APC	: Antigen presenting cell.
APLs	: Altered peptide ligands.
BCIP	: 5-bromo-4-chloro-3-indolyl phosphate.
BiP	: Heavy chain binding protein.
CDK4	: Cyclin dependent kinase-4.
CTL	: Cytotoxic T lymphocyte.
TIL	: Tumor infiltrating CD4 positive T cell.
DBM	: Diazobenzyloxymethyl.
DPT	: Diazophenylthio.
ER	: Endoplasmic reticulum.
ERP72	: Endoplasmic reticulum protein-72.
ESR	: Erythrocyte sedimentation rate.
GA	: Geldanamycin.
GM-CSF	: Granulocyte monocyte colony stimulating factor.
Gp96	: Heat shock protein 90-related glycoprotein.
GRP94	: Glucose regulated protein 94.
H ₂ O ₂	: Hydrogen peroxide.
HSC73	: Heat shock cognate-73.
HSPs	: Heat shock proteins.
IFNs	: Interferones.
Ii	: Invariant chain.
IL-1	: Interleukin-1.
IL-2	: Interleukin-2.
IL-6	: Interleukin-6.
IL-10	: Interleukin-10.
kb	: Kilo base.
kDa	: Kilo Dalton.

LIST OF ABBREVIATIONS (Cont.)

LSD	: Dlysergic acid diethylamide.
mA	: milliampere.
MHC	: Major histocmpatibility complex.
MM	: Millimeter.
NBT	: Nitroblue tetrazolium.
nDNA	: native DNA.
NK	: Natural killer.
PBMC	: Peripheral blood mononuclear cells.
PBS	: Phosphate buffered saline.
PDI	: Protein disulfide isomerase.
RA	: Rheumatoid arthritis.
rpm	: Revolution per minute.
SDS	: Sodium dodecyl sulphate.
SDS-PAGE	: Sodium dodecyl sulphate-polyacrylamide gel electrophoresis.
TAP	: Transporter associated with antigen processing.
TBST	: Tris buffered saline tween.
TCR	: T cell receptor.
TEMED	: N ₁ N ₁ N` ₁ N` ₁ -tetramethylenediamine.
Th1	: T helper 1.
TNF	: Tumor necrosis factor.
Tris-cL	: Tris-chloride.
V	: Volt.
VSV	: Vesicular stomatitis virus.
v/v	: Volume per volume.
w/v	: Weight per volume.